

ROTTMOSER, F. et al.
Serial No. **Unknown**

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) Radio-frequency filter, ~~in particular in the form of a duplex filter, having the following features~~comprising:

a board or a substrate ~~(1)~~ is provided,

a continuous line ~~(3)~~ is ~~formed~~disposed on the board or the substrate ~~(1)~~,

resonators ~~(9, 19)~~ are provided on the board or the substrate ~~(1)~~, on the opposite side to the continuous line ~~(3)~~,

the resonators ~~(9, 19)~~ are being arranged offset with respect to one another in the longitudinal direction of the continuous line ~~(3)~~,

a ground surface ~~(11)~~ is provided, preferably offset parallel to the board or to the substrate ~~(1)~~, with a dielectric preferably being provided between the board or the substrate ~~(1)~~ and the ground surface ~~(11)~~,

~~characterized by~~

~~the following further features:~~

the resonators ~~(9, 19)~~ are being coupled to the continuous line ~~(3)~~ through a dielectric, preferably in the form of the board or of the substrate ~~(1)~~,

at least a portion of at least one resonator ~~(9, 19)~~ is being arranged such that, when viewed at right angles to the board or to the substrate ~~(1)~~, at least a portion of one resonator ~~(9, 19)~~

a) overlaps the continuous line ~~(3)~~, or

b) is at a very short distance from the continuous line (3), which is less than or equal to the width of the continuous line transversely with respect to its longitudinal direction, and

the continuous line (3) ~~has~~ having at least one line constriction (5a) or at least one broadened line area (5b).

2. (currently amended) Radio-frequency filter according to claim 1, ~~characterized in that~~ wherein at least a portion of at least one resonator (9, 19), ~~preferably at least a portion of the resonators (9, 19),~~ is arranged such that, when viewed at right angles to the board or to the substrate (1), at least a portion of at least one resonator (9, 19) is at a maximum distance from the continuous line (3) which is less than or equal to half the width of the continuous line (3a).

3. (currently amended) Radio-frequency filter according to claim 1 ~~or 2~~, ~~characterized in that~~ wherein, when viewed at right angles to the board or to the substrate (1), at least a portion of all the resonators (9, 19) overlaps the continuous line (3), or its closest end or section is at a maximum distance from the continuous line (3) which is equal to or less than half the width of the continuous line (3).

4. (currently amended) Radio-frequency filter according to ~~one of claims 1 to 3~~ claim 1, ~~characterized in that~~ wherein the at least one line constriction (5a) and/or the at least one broadened line area (5b) is provided between two resonators (9, 19).

5. (currently amended) Radio-frequency filter according to ~~one of claims 1 to 3~~ claim 1, ~~characterized in that~~ wherein the continuous line (3) has a line constriction (5a) or a broadened line area (5b) at least with respect to one resonator (9, 19) in the area in which the continuous line (3) overlaps at least one section or one portion of the resonator (9, 19) or is at a minimum distance from the resonator (9, 19) there.

6. (currently amended) Radio-frequency filter according to ~~one of claims 1 to 5~~
claim 1, characterized in that wherein the resonators (9, 19) are formed on that face of
the board or of the substrate (1) which faces the ground surface (11).

7. (currently amended) Radio-frequency filter according to ~~one of claims 1 to 6~~
claim 1, characterized in that wherein the resonators (9) are capacitively coupled to the
continuous line (3).

8. (currently amended) Radio-frequency filter according to claim 7,
~~characterized in that~~ wherein the capacitively coupled resonators have at least one
stripline section which runs in a straight line and whose longitudinal direction is aligned
such that it runs transversely, that is to say preferably at right angles, to the extent
direction of the continuous line (3).

9. (currently amended) Radio-frequency filter according to claim 7 ~~or 8~~,
~~characterized in that~~ wherein the width (B1, B2, B3) of the capacitively coupled
resonators (9) corresponds in its longitudinal direction to the length of the line
constriction (5a) or of the broadened line area (5b) of the line (3), or differs from it by no
more than 50%, and preferably by less than 30%.

10. (currently amended) Radio-frequency filter according to ~~one of claims 1 to 9~~
claim 1, characterized in that wherein the bandpass/bandstop response of the RF filter
(9) can be adjusted by means of the length (L1, L2, L3) of the respective resonator (9a,
9b, 9c) and/or by means of the extent of the line constriction (5a) or of the broadened
line area (5b) and/or by the offset of the respective resonator (9; 9a, 9b, 9c) from the
continuous line (3), or by the extent of the overlap between the continuous line (3) and
the adjacent end of the respective resonator (9; 9a, 9b, 9c).

11. (currently amended) Radio-frequency filter according to ~~one of claims 1 to 6~~
claim 1, characterized in that wherein the resonators (9) are inductively coupled to the
continuous line (3).

12. (currently amended) Radio-frequency filter according to ~~one of claims 1 to 6 or 11~~ claim 1, characterized in that wherein the inductively coupled resonators are formed from stripline resonators with a U-shaped or approximately U-shaped plan view, which are arranged such that their respective central connecting section ~~(19')~~, by means of which the two limbs ~~(19'')~~ of the at least approximately U-shaped stripline resonators are connected to one another lies at least approximately parallel to the adjacent section of the continuous line ~~(3)~~.

13. (currently amended) Radio-frequency filter according to ~~one of claims 1 to 6, 11 or 12~~ claim 1, characterized in that wherein the width ~~(B1, B2, B3)~~ of the limbs of the stripline resonators is less than the longitudinal size of the line constriction ~~(5a)~~ or broadened line area ~~(5b)~~.

14. (currently amended) Radio-frequency filter according to ~~one of claims 1 to 6 or 11 to 13~~ claim 1, characterized in that wherein the overall width or coupling length ~~(K1, K2, K3)~~ of the resonators ~~(19)~~ is greater than the longitudinal size of the line constriction ~~(5a)~~ or broadened line area ~~(5b)~~.

15. (currently amended) Radio-frequency filter according to ~~one of claims 1 to 6 or 11 to 14~~ claim 1, characterized in that wherein the bandpass/bandstop response of the RF filter ~~(19)~~ can be adjusted by means of the length ~~(L1, L2, L3)~~ of the respective resonator ~~(9a, 9b, 9c)~~ and/or by the extent of the line constriction ~~(5a)~~ or of the broadened line area ~~(5b)~~ and/or by the offset between the respective resonator ~~(9; 9a, 9b, 9c)~~ and the continuous line ~~(3)~~, or by the extent of overlap between the continuous line ~~(3)~~ and the adjacent end of the respective resonator ~~(9; 9a, 9b, 9c)~~.

16. (currently amended) Radio-frequency filter according to ~~one of claims 1 to 15~~ claim 1, characterized in that wherein a duplex filter is composed of two radio-frequency filter arrangements ~~(9, 19)~~.

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17. (currently amended) Radio-frequency filter according to claim 16, ~~characterized in that~~wherein one branch of the duplex filter comprises a bandstop filter with resonators (9) coupled inductively, and the other branch comprises a bandstop filter with the resonators (19) coupled capacitively.

18. (currently amended) Radio-frequency filter according to ~~one of claims 16 or 17~~ claim 16, ~~characterized in that~~wherein, in order to pass a lower band at a lower frequency, one branch of the duplex filter has an asymmetric bandstop filter with inductively coupled resonators (9), and, in order to pass a higher frequency in a higher band, the other branch has a bandstop filter with capacitively coupled resonators (19).

19. (currently amended) Radio-frequency filter according to ~~one of claims 1 to 18~~ claim 1, ~~characterized in that~~wherein the bandpass/bandstop response of the radio-frequency filter can be adjusted such that $f_{\text{parallel}} < f_{\text{series}}$.

20. (currently amended) Radio-frequency filter according to ~~one of claims 1 to 19~~ claim 1, ~~characterized in that~~wherein the filter or the bandstop filter is asymmetric.